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(54) Abstract Title  
**Portable device for storing and displaying personal information**

(57) A portable electronic device for storing and displaying information, such as that found on business cards, comprises a (magnetic or smart) card reader (5), a data store (13) and a display (6). The reader (5) transfers business details from a card to the device (1) where they are stored in a record of a database provided in the data store (13) and can be accessed by a keyboard (7) to be shown on the display (6). Business detail records retained in the store can be uploaded to a main contact database or downloaded, via a serial communications link (18). The link may be a direct wired link or a wired link in series with a wireless link over a telephone network.

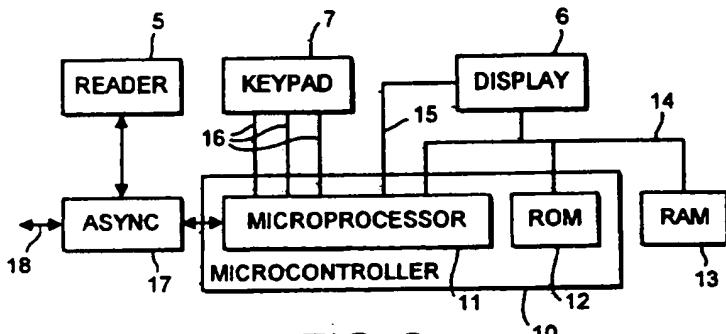


FIG. 2

At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

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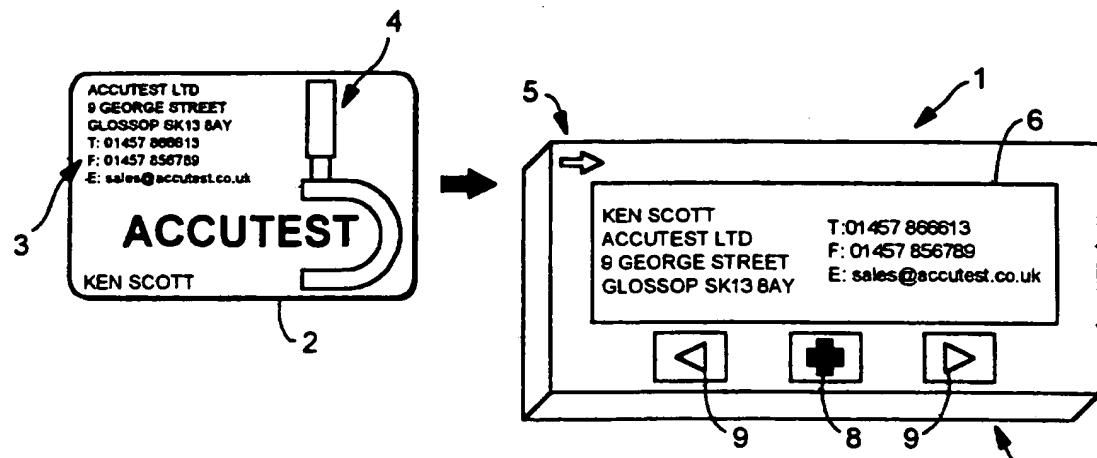


FIG. 1

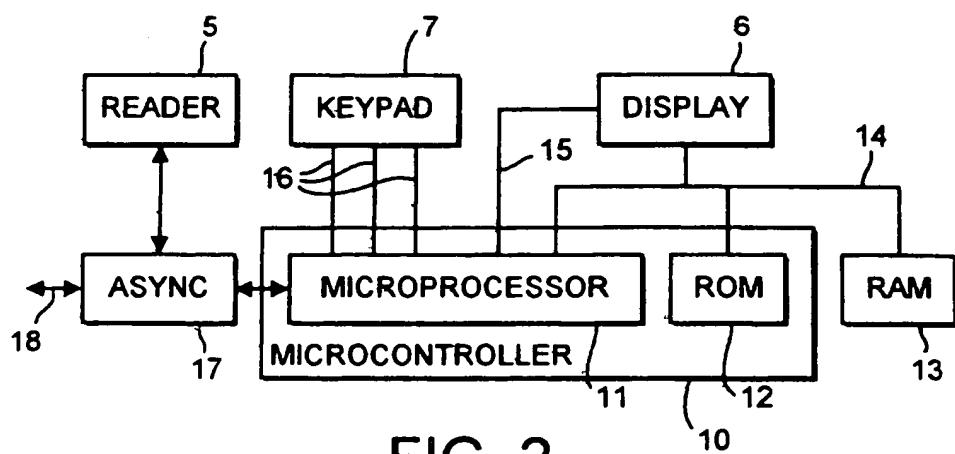
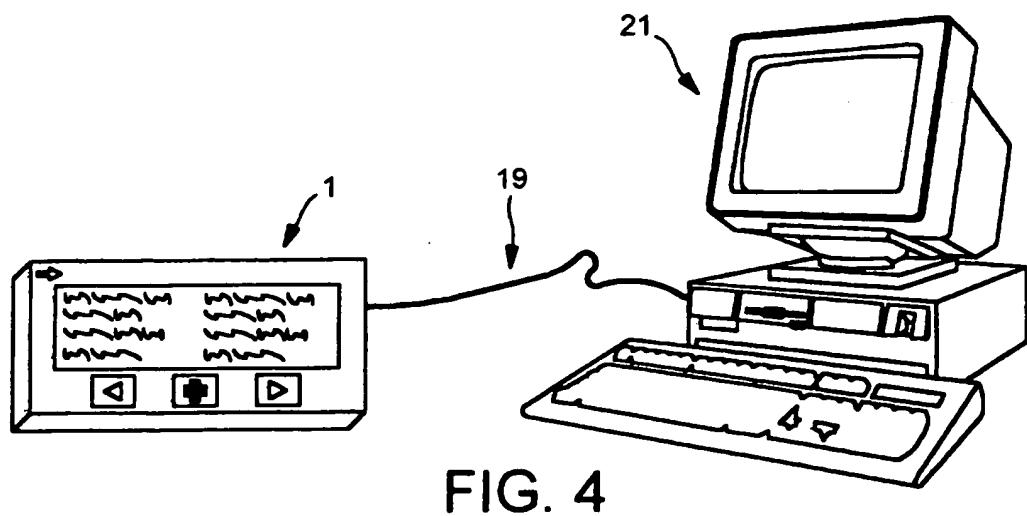
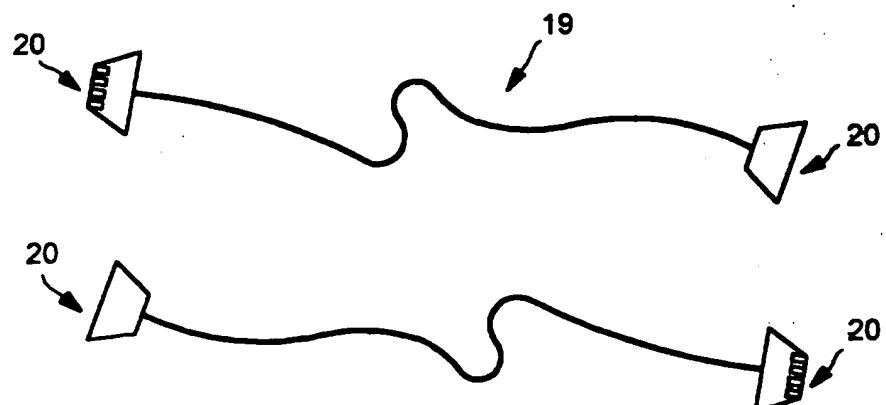


FIG. 2



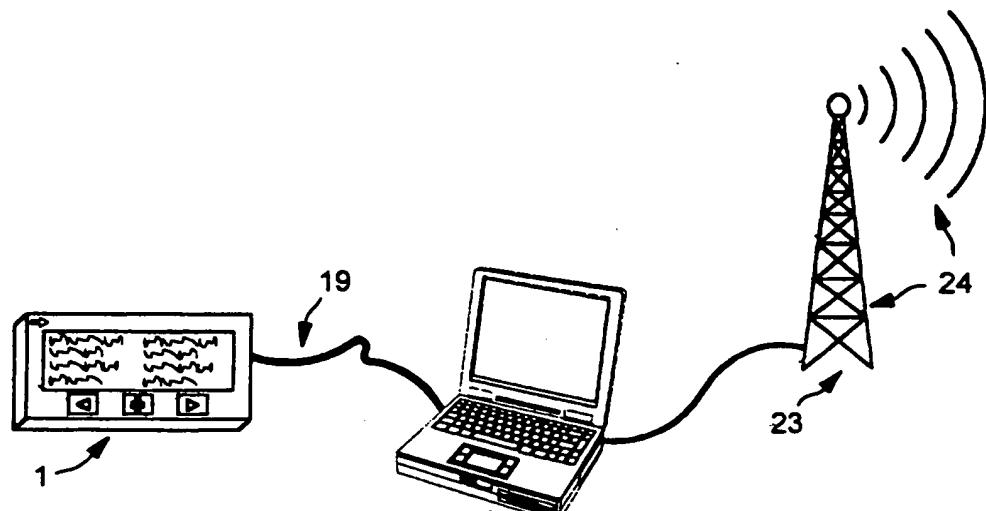


FIG. 5

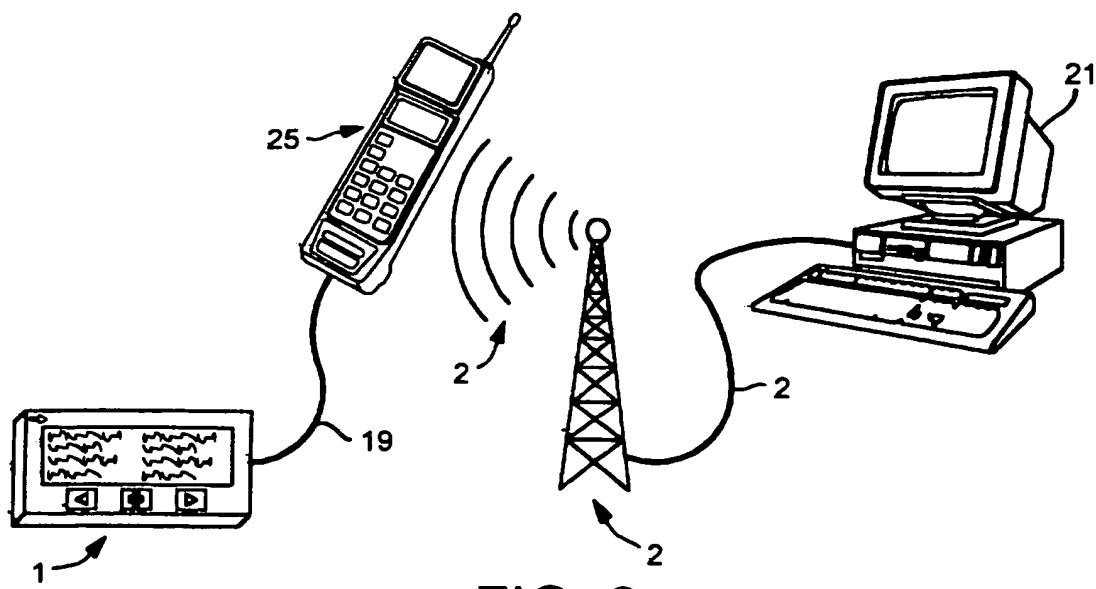


FIG. 6

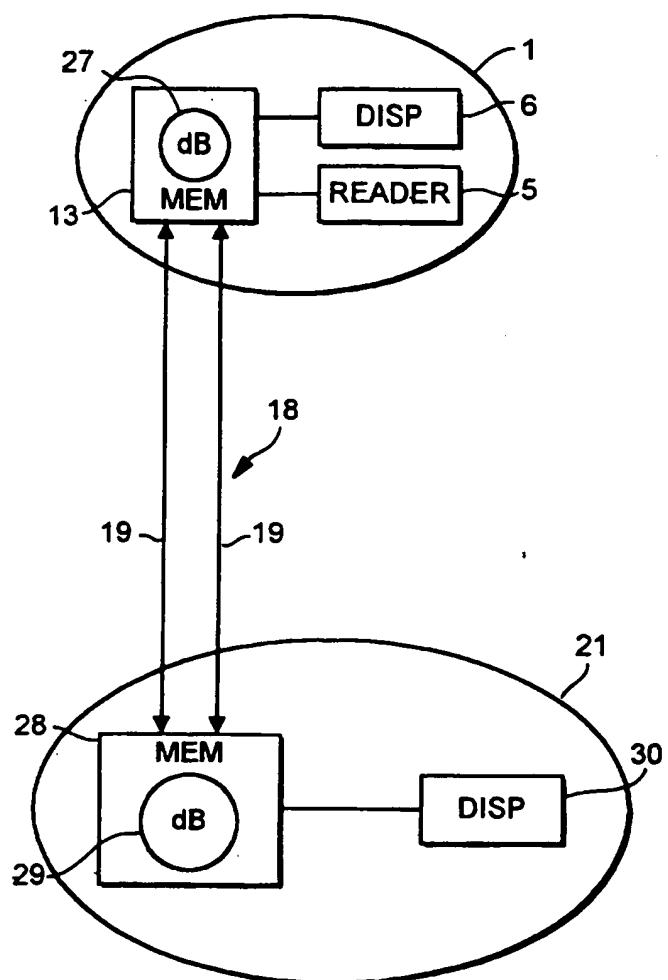


FIG. 7

A PORTABLE DEVICE FOR STORING AND DISPLAYING  
PERSONAL INFORMATION

Field of the Invention

The present invention relates to a device for  
5 storing and displaying personal information, for  
example business card details such as name, company  
position, address, telephone number, fax number, and  
E-mail address, and more particularly, to a simple  
electronic device which is dimensioned to fit into a  
10 pocket of a user and which is thereby readily  
portable.

Background of the Invention:

It is commonplace at business meetings to present  
business cards which set out the personal details of  
15 the person presenting the card, such as name, position  
in company, address etc. In Japan, for example,  
exchange of business cards is a very important part of  
the business culture as the business card is regarded  
as an extension of that person. After any such  
20 meeting, the recipient of the business card or cards  
would like to update his or her contact database back  
at the office or on their portable computer. However,  
such an updating task can often be forgotten or  
overlooked and the business cards can begin to

collect. If the business person does not have access to a computer for several days a large collection of cards can build up and sorting out these cards at a later date can become a rather onerous task. In fact, 5 crucial business data can be lost in this way and also by loss of individual cards. Furthermore, when the business information provided on large numbers of cards is to be transferred to the company contact database, a problem of keying-in errors can arise.

10 Summary of the Invention

The present invention aims to overcome at least some of the abovementioned problems with the existing business card information exchange procedure.

In its broadest aspect, the present invention 15 provides an electronic portable device which can read, store and display business card information such that exchange of business card information is effected electronically without human errors. More particularly, according to one aspect of the present 20 invention, there is provided a portable electronic device for storing and displaying personal information, the device being pocket-sized and comprising: an information reader for reading personal information provided in a portable store; a data store 25 for storing the personal information in a data record;

a database comprising a plurality of data records provided in the data store, the device being arranged to provide access to any of the data records; and a display for displaying the personal information of one or more data records.

The portable store is preferably a plastics material business card with a magnetic stripe retaining the personal details of the card holder. In this case, the information reader of the device is a magnetic stripe card reader and information is entered by "swiping" the business details from the magnetic stripe on the card into the hand-held device (in a way similar to that used to read account details from a credit card). The business details are then displayed on the device, and the recipient can then retain the data in the device for future reference by transferring it to the data store. Meanwhile the holder of the business card can retain his card and give it to another person at the same meeting for another "swipe". The holder therefore only needs to keep one card rather than have a hundred or so printed onto standard cardboard. Changes to a holder's details can also easily be accommodated by re-programming the business card with new details without the need for "Sorry, I'm just waiting for my new cards to be printed". In addition, more business

details can be stored in the magnetic stripe than those displayed on the front of the card, so enabling a wider variety of information to be "swiped" (such as web-site addresses, home numbers etc.).

5        It should also be noted that data displayed on the front of the business card may well be stored in the magnetic stripe in another language (such as Japanese on the card with Japanese and English stored in the stripe). This can eliminate the need to print  
10      details in two languages on one business card. The software running on the device is preferably able to select the language to use for storing and displaying the business details.

15      The technology to manufacture the business card is already well established as it is the same as that used with current credit cards, debit cards, pass cards etc. The format of the data on the card is preferably compatible with international credit card data standards that currently exist, as the device is  
20      intended for worldwide use.

25      The details stored in the device can now be viewed at any time during or after the meeting, and at a convenient time can be uploaded into the company's contact database by a variety of modern day communication techniques. In this way, details can be shared by "salesmen on the road" by transferring data

from one device to a colleague's device. In a similar way, business details from the company's contact database can be downloaded into the device (either directly from a PC or remotely over the Internet, for example) so that the businessman can review the details of people he is about to meet, with telephone numbers just in case he has to say he is caught up in traffic and is going to be late.

According to another aspect of the present invention, there is provided a portable device for storing and displaying personal information, the device being dimensioned to fit a user's pocket, the device comprising means for reading the personal information from an information card and displaying the personal information and a database of a plurality of personal information records, the database being updatable by the reading means and each of the records of the database being selectively displayable on the displaying means.

According to another aspect of the present invention, there is provided a portable device for storing and displaying persons' identification data, the device being of a size which allows the device to fit into a pocket of the user, the device comprising: an information reader for reading a portable information store carrying a person's identification

data; a temporary data store including a first database for storing the data read by the information reader; a display arranged to selectively display information data provided in records of the first 5 database; means for transferring data between the temporary data store and a second database in a permanent store of a computer, said transferring means including a simple wired communications output link from the device.

10 According to another aspect of the present invention there is provided a distributed database system comprising: a computer having a main database provided in a permanent store thereof, the main database comprising a plurality of records each 15 storing persons' identification data; a portable hand-held device for reading the person's identification data from a portable information store and for displaying the information data, the device including a smaller temporary database of a plurality 20 of identification data records; and means for transferring the information data between the main database and the temporary database so as to provide the portable device with relevant information data and to update the main database with any new information 25 obtained from the portable device.

The communications link from the portable device

and the computer may either comprise a direct wired link or a combination of a wired/wireless communications link which utilises the general telephone network. Preferably, the portable device 5 simple wired output such as a serial link. This advantageously minimises the cost and battery consumption of the device and simplifies the overall design which is an important design feature.

According to another aspect of the present 10 invention, there is provided a method of updating a main database of persons' identification data provided in a computer, said method comprising: reading a portable information store carrying a person's identification data; storing the data in a record of 15 a temporary database provided in a store of a portable hand-held device; displaying the data stored in a record of the temporary database on a display of the device; transferring the stored data from the temporary database to the main database via 20 transferring means provided between the hand-held device and the computer.

The basic capabilities of a device embodying the present invention are set out below;

25

- to read "business details" stored on the magnetic stripe on a credit-card sized plastic business card;

- to store those business details in the memory/data store of the device;
- to allow scroll through and display of any stored business details on the display;
- 5           • to upload the business details to a "industry-standard" contact database; and
- to download business details from the contact database to the device.

10           The above and further features of the invention are set forth with particularity on the appended claims but will become clearer from consideration of the following detailed description of exemplary embodiments of the present invention given with reference to the accompanying drawings.

15           Brief Description of the Drawings:

Figure 1 is a schematic perspective diagram showing an electronic business card and a device for storing and displaying the business card information embodying the present invention;

20           Figure 2 is a block diagram of the components of the device of Figure 1;

Figure 3 is a schematic diagram showing a set of communications leads for use with the device of Figure 1;

25           Figure 4 is a perspective schematic diagram

showing a distributed database system including the device of Figure 1;

Figure 5 is a perspective schematic diagram of an alternative communication link between the device of Figure 1 and a computer via a telephone network; and

Figure 6 is a perspective schematic diagram of a further alternative communications link between the device of Figure 1 and a computer via a telephone network; and

10                   Figure 7 is a block diagram showing the  
distributed database system of Figure 4.

## Detailed Description of Exemplary Embodiments

Referring to Figure 1, there is shown a device 1 for reading and displaying personal information such as business details. The device 1 is used in conjunction with an electronic business card 2 which has its information such as name, address, position in company etc, provided on a magnetic stripe in the same manner as a credit card. The information is stored in a universally accepted electronic format such as that used for a conventional credit card. The purpose of using such a format is that the manufacture of such cards 2 becomes standardised and easier as does worldwide compatibility of devices 1 with various different cards 2. The electronic business card also

has its information provided in a printed format 3 on the surfaces of the card 2. Furthermore, a company trademark 4 or photograph (not shown) may also be provided in both printed and electronic formats.

5 The device 1 is designed to be hand-held in use and is dimensioned to fit into the user's pocket. More specifically, in this embodiment, the size of the device is one and a half times that of a pocket pager.

10 The device includes a magnetic card reader 5, a dot-matrix liquid crystal display 6 and a simple keypad 7 provided a light-weight plastics enclosure 8 similar to that currently used for mobile telephones. Information is read into the device 1 by swiping the card 2 through the card reader 5. The business 15 details of the card 2 are displayed on the display 6 and then the user can store this data into a database (not yet shown) within the device 1 by pressing the enter key 8 of the keypad 7. Each of the database records contains a set of business detail fields 20 including at least name, address and telephone number. Each record can be individually accessed by use of the up/down arrow keys 9 of the keypad 7. The electronic components that make up the device 1 are described in detail hereinafter.

25 Referring now to Figure 2, the device 1 is controlled by a microcontroller 10 comprising a

Intel™ 80C196KR core microprocessor with 4K Bytes of internal Read Only Memory (ROM) 12 for program storage. Data storage is provided by 16K Bytes of external Random Access Memory (RAM) 13 which is 5 directly connected via an internal data bus 14 to the display 6, the microprocessor 11 and the ROM 12. The RAM 13 is large enough to accommodate upto 128 "Business Details" without resorting to compressing the data, through a compression/expansion algorithm 10 could readily be employed in the microcontroller 10 for maximising memory usage efficiency if so required.

The display 6 is directly coupled to the microprocessor 11 by a dedicated display driver bus 15 which provides all the required timing and power 15 signals to the display 6, whereas data to be displayed is received via the internal data bus 14. The keys 8, 9 of the keypad 7 are also directly coupled to the microprocessor 11 via simple dedicated links 16.

Information is read into the device 1 via the 20 magnetic card reader 5 which utilises existing "swipe-card" reader technology. The reader 5 is coupled to an asynchronous serial port 17 which is in turn coupled to the microcontroller 10 thereby enabling data read from card 2 to be stored in the RAM 25 13. The asynchronous serial port 17 also allows direct serial access 18 from the microcontroller 10 for

external communications. The use of the reader 5 and the need for external communications are mutually exclusive actions which conveniently allows a single asynchronous serial port 17 to be shared.

5 The power source (not shown) for the device 1 is a rechargeable battery which is similar to that used in mobile telephones. In this embodiment the battery provides in excess of over 200 hours of "standby" time without recharge and 36 hours if constantly in use and 10 using the display 6.

In addition, the device 1 is provided with a voltage sensing circuit which monitors the output voltage of the battery and presents this information in an appropriate manner on the display 6. Such 15 battery condition monitoring circuits are commonly used in mobile phones to indicate the condition of the battery.

The direct serial access 18 from the asynchronous port 17 is provided by a simple industry-standard two wire serial communications link 18. The link 18 is 20 provided by one of a set of communications leads 19 which each has a connector 20 provided at its respective ends. Each lead 19 provides a link from the device 1 to particular communications device or a 25 direct link to a computer as is described hereinbelow. One of the communication leads 19 can also be used to

couple the device 1 to another similar device 1 so as to allow transfer of records directly between the devices 1.

Referring now to Figure 4, an arrangement where 5 the device 1 is connected directly to a Personal Computer (PC) 21 via the communication lead 19 is shown. The connector 20 of lead 19 plugs directly into a standard serial port (not shown) of the PC 21. In this way, the business details which have been read 10 into the device 1 and have been accumulating in its mini database (not yet shown) can be uploaded via the lead 19 to the PC 21 when the user returns to his or her office. This uploaded information is stored in a main contact database (not yet shown) and can be 15 manipulated using industry standard contact database management software installed on the PC 21.

It should be noted that not only can business details be uploaded in this way but also details from the main contact database in the PC 21 can be 20 downloaded to the main database in the device 1 for the business persons use, for example, to give the business person some prior information about the people he or she is going to meet on their next business trip. Once the data has been downloaded it 25 can be stored and displayed as normal on the display 6 as if the business person had scanned it themselves

directly into the device 1.

An alternative communications link 18 between the device 1 and the PC 21 can be achieved by use of the telephone network. In particular, one way of using the telephone network is shown in Figure 5 where the device is connected via the lead 19 to a portable notebook computer 22. The portable notebook computer 22 is in turn connected to the telephone network 23 which includes wireless links 24 to other parts of the telephone network 23 to which the PC 21 is connected.

As mentioned previously, the communications link 18 operates in two directions and both uploading of business details from the device 1 to the PC 21 as well as downloading of business information from the PC 21 to the device 1 can be carried out. When the telephone network 23 provides part of the communications link 18, then it is possible to transfer data via the Internet.

Another alternative wired/wireless communications link 18 is illustrated in Figure 6 where the PC 21 is shown connected to the telephone network 23 which includes a wireless link 24. The device 1 is connected via lead 19 to a mobile telephone 25 which in turn connects to the wireless link 24 of the telephone network 23. This arrangement is particularly useful for business people who do not

wish to carry bulky items such as portable computers but who do wish to be able to upload/download information frequently and at any time. In addition, this type of link 18 makes it possible for several 5 mobile business persons to each transfer business details directly between themselves without the need to use the main contact database back at the office on the PC 21.

Referring now to Figure 7, a distributed database 10 system 26 employing the device 1, the communications link 18 (as a direct connection as in Figure 3) and the PC 21 is shown. The mini database 27 is provided in the RAM 13 of the device 1. This mini database 27 contains relevant business details for the business 15 person and usually has enough space to allow further business detail records to be created by scanning information into the device via the reader 5 and to be displayed on the display 6.

The device 1 is coupled via the leads 19 to a 20 main memory (RAM) 28 of the PC 21. The main contact database 29 stores all the business details collected for the company and provides an invaluable source of data. Each of the business detail records of the main database 29 can also be viewed at the office on a 25 display 30 of the PC 21.

The above described distributed database system

is not restricted to one mini database 27 per main database 29. Rather, it is possible to have a plurality of mini databases 27 all sharing the information provided on the main database 29. This is 5 typically the kind of structure that would be of most use in a company structure for example by a sales force of a company.

In an alternative embodiment of the present invention, the device 1 is designed to provide greater 10 functionality by including a touch sensitive screen as its display. This enables the screen to emulate a QWERTY keyboard and the user can append personal notes to each business detail record in the mini database 27. These notes could be comments on the meeting or 15 things to do as a result of the meeting i.e. the types of things one would write on the back of a business card. The structure of each record in the mini database 27 is altered to have a "notes" field and as a result the device 1 has a larger RAM 13 to 20 accommodate the larger data structure.

In addition, the device is arranged to be used with a smart card instead of a magnetic stripe card and is provided with a smart card reader. The smart card is provided with image information showing the 25 company logo and/or a photographic image of the card holder. The device is arranged to be able to read all

this information and to display the corresponding images on the high-resolution dot-matrix liquid crystal display which can be either monochrome or colour. The microprocessor utilises data compression/expansion techniques in order to be able to handle the vast amounts of image data associated with the visual information without requiring huge amounts of RAM.

Having described the present invention with reference to particular embodiments, it is to be appreciated that the described embodiments are exemplary only and are susceptible to modification and variation without deviation from the spirit and scope of the invention as set forth in the appended claims.

For example, it is possible to use bar codes provided on plastic cards as the portable data stores and a bar code scanner in the device provided as the information reader. In addition, the display may be large enough to occupy the whole side of the device such that the maximum amount of information, i.e. more than one record at a time, can be presented on the display.

CLAIMS:

1. A portable electronic device for storing and displaying personal information, the device being pocket-sized and comprising:

5 an information reader for reading personal information provided in a portable store;

a data store for storing the personal information in a data record;

10 a database comprising a plurality of data records provided in the data store, the device being arranged to provide access to any of the data records; and

a display for displaying the personal information of one or more data records.

15 2. A device according to claim 1, wherein the information reader is arranged to read personal information provided in the portable data store in a universally accepted standard format such as a credit card data format.

20 3. A device according to claim 1 or 2, further comprising means for transferring data records between the database provided in the data store and another larger database provided in a permanent store of a computer, the transferring means including a single

wired communications output link from the device.

4. A device according to claim 3, wherein the communications output link comprises a standard two-wire serial communications link.

5 5. A device according to any preceding claim further comprising a microcontroller connected to the data store, the display and the information reader, the microcontroller being arranged to manipulate the input and output of data to and from the database.

10 6. A device according to claim 5 as dependent on claim 3 or 4, wherein the microcontroller is connected to the information reader via an asynchronous shared serial port and the serial port also provides a part of the transferring means.

15 7. A device according to any preceding claim, further comprising means for inputting control commands from a user into the device for accessing information stored in the database.

20 8. A device according to claim 7 wherein the inputting means comprises a keypad or a touch screen.

9. A device according to any preceding claim wherein the information reader comprises a magnetic card stripe reader, a bar code reader or a smart card reader.

5 10. A device according to any preceding claim, wherein the device is arranged to read data corresponding to a plurality of different written languages and to select one language for storage and display.

10 11. A device according to any preceding claim wherein the device is arranged to read, store and display data corresponding to images.

12. A device according to any preceding claim wherein the display comprises a high resolution dot matrix liquid crystal display.

15 13. A device according to any preceding claim, further comprising a power source and means for monitoring the condition of the power source, the monitoring means being arranged to indicate when the power source requires recharging or renewal.

20 14. A device according to any preceding claim,

wherein each of the data records of the database is arranged to store business details obtained from the portable store including name, address and telephone number.

5       15. A portable device for storing and displaying personal information, the device being dimensioned to fit a user's pocket, the device comprising means for reading the personal information from an information card and displaying the personal information, and a  
10      database of a plurality of personal information records, the database being updatable by the reading means and each of the records of the database being selectively displayable on the displaying means.

15      16. A portable device for storing and displaying persons' identification data, the device being of a size which allows the device to fit into a pocket of the user, the device comprising:

20      an information reader for reading a portable information store carrying a person's identification data;

          a temporary data store including a first database for storing the data read by the information reader;

          a display arranged to selectively display information data provided in records of the first

database;

means for transferring data between the temporary data store and a second database in a permanent store of a computer, said transferring means including a 5 simple wired communications output link from the device.

17. A distributed database system comprising:

10 a computer having a main database provided in a permanent store thereof, the main database comprising a plurality of records each storing persons' identification data;

15 a portable hand-held device for reading the person's identification data from a portable information store and for displaying the information data, the device including a smaller temporary database of a plurality of identification data records; and

20 means for transferring the information data between the main database and the temporary database so as to provide the portable device with relevant information data and to update the main database with any new information obtained from the portable device.

18. A system according to claim 17, wherein the transferring means comprises a wired communication

link between the computer and the portable device.

19. A system according to claim 17, wherein the transferring means comprises a combination of a wired communications link in series with a wireless link.

5 20. A system according to claim 19, wherein the wireless link is provided by a mobile telephone network and the wired link can connect the device to a mobile telephone.

10 21. A system according to claim 19, wherein the wireless link is provided by part of a general telephone network and the wired link can connect the device to a portable computer which is in turn connectable to the general telephone network.

15 22. A method of updating a main database of persons' identification data provided in a computer, said method comprising:

reading a portable information store carrying a person's identification data;

20 storing the data in a record of a temporary database provided in a store of a portable hand-held device;

displaying the data stored in a record of the

temporary database on a display of the device;  
transferring the stored data from the temporary  
database to the main database via transferring means  
provided between the hand-held device and the  
5 computer.

23. A method according to claim 22, further  
comprising:

transferring data from the main database to the  
temporary database via the transferring means provided  
10 between the device and the computer.

24. A method according to claim 22 or 23, further  
comprising:

providing means for accessing and selectively  
displaying various records of persons' identification  
15 data provided in the temporary database of the device.

25. A device, method or system substantially as  
described herein with reference to the accompanying  
drawings.



Application No: GB 9717385.0  
Claims searched: 1-25

Examiner: Mike Davis  
Date of search: 17 March 1998

**Patents Act 1977**  
**Search Report under Section 17**

**Databases searched:**

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.P): G4H (HSD,HSE,HSU,HTG), G4A (AUDB)

Int Cl (Ed.6): G06F

Other: Online: WPI

**Documents considered to be relevant:**

Category	Identity of document and relevant passage	Relevant to claims
X	WO 93/04440 A1 (SCHROY)	1,15 at least
X	US 5555105 (SHAHIR ET AL)	1,15-17,22 at least
X	US 5493105 (DESAI)	

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

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